Council on Postsecondary Education
November 5, 2001

# New Program Approval
# Bachelor of Science in Computer Science
# Morehead State University

Action: The staff recommends that the council approve the Bachelor of Science in Computer Science proposed by Morehead State University.

The council staff recommends approval of this program based on evidence of:

- The growing need for computer specialists.
- The potential for the program to contribute to economic development.
- Alignment of program requirements with national accreditation standards.
- MoSU's administrative support for the program.
- MoSU's ability to adequately fund the program with current resources.

Qualified computer specialists are needed at both the national and state levels. The Federal Bureau of Labor Statistics' *Occupational Outlook Handbook, 2000-2001* predicts that computer-related occupations will be among the fastest-growing and lead the nation in number of new jobs created for the 1998-2008 period. Current economic development initiatives in eastern Kentucky seek to attract high-technology industries to the area. Through this new program, MoSU will address the general shortage of computer professionals and promote economic development in its service region by increasing the pool of qualified workers.

The Bachelor of Science in Computer Science will replace an existing Area of Concentration in Mathematics and Computing. According to faculty in MoSU's Department of Mathematical Sciences, the current program, while attracting students, has failed to keep pace with rapid changes in computer science over the past ten years. Students in the new Bachelor of Science in Computer Science program will choose between tracks in software engineering and scientific computing.

Course requirements reflect guidelines from national accreditation agencies and align with courses offered by graduate programs at several Kentucky institutions. Upon approval, MoSU will be party to an existing transfer agreement between several Kentucky universities and the Kentucky Community and Technical College System. Selected courses offered by other institutions through the Kentucky Virtual University will be accepted as course substitutions for program requirements.

Most resources necessary to implement this program are already in place. The remainder will be funded through internal reallocation of funds.

Using the Kentucky Postsecondary Program Proposal System, MoSU posted the proposed program to the council's Web site. It was reviewed without objection by the other Kentucky public and independent institutions. The MoSU Board of Trustees approved the program at its March 3, 2001, meeting. The Committee on Equal Opportunities and the Council on Postsecondary Education approved MoSU's qualitative equal opportunity waiver August 20, 2001, and September 16, 2001, respectively.

An executive summary prepared by MoSU is attached.

Staff preparation by Christina Whitfield

Proposed Bachelor of Science Degree
in Computer Science
Department of Mathematical Sciences
Morehead State University

## Background

For over 25 years the Department of Mathematical Sciences has offered an Area of Concentration in Mathematics and Computing. The program, originally known as Mathematics and Computer Programming, was started shortly after the first desktop computers became available in the 1970's. It has successfully trained students for positions in such business and industrial giants as BellSouth, Ashland Oil, Humana, Meade Data, Lexmark, IBM and AT&T. Although the Area of Concentration in Mathematics and Computing served students extremely well through the 1980's and into the 1990's, the present rapid rate of change in technology and technology-related fields requires reorganization and modification of the program. Therefore, the Department of Mathematical Sciences proposes the existing program be revised into an Area of Concentration in Computer Science in order to meet the current need for a workforce skilled in the use of technology.

## Analysis

Recently, a concern has been growing within the Department of Mathematical Sciences that the existing Area of Concentration in Mathematics and Computing may not be properly preparing students for the most recent technological needs of business, industry and academia. In addition, the Mathematics and Computing program has been attracting fewer students from the Morehead State service region than would be expected. One reason is that the current program is a "mathematics and computing" program rather than a "computer science" program and as such the computer-related program requirements have simply not kept pace with the rapidly changing role of technology and computer science in society.

Following recommendations of the Institute of Electrical and Electronics Engineers Computer Society and the Association for Computing Machinery and using the Computer Science Accreditation Commission of the Computing Science Accreditation Board accreditation criteria as guidelines, the proposed program includes required courses from four additional departments outside the mathematical sciences: Information Systems; Industrial Education and Technology; Physical Sciences; and English, Foreign Languages and Philosophy. Additionally, six new computer science courses have been designed to provide coverage of current areas of study and research in the core fields of Computer Science. The new courses cover advanced data structures, theory of programming languages, operating systems, software engineering, computer graphics and parallel processing.

The United States Department of Education and the National Science Foundation have recognized computer science as an "area of national need". The proposed Area of Concentration in Computer Science is designed to fill this need in Morehead State University's service region by increasing the number of technologically skilled

graduates. In time, this will attract more technology-based companies to the region. The program will be a collaborative venture with the Kentucky Community and Technical College System with the creation of a transfer framework. Furthermore, the curriculum aligns with courses offered by graduate programs at Eastern Kentucky University, Northern Kentucky University, Western Kentucky University and the University of Kentucky. In effect, this program will build bridges so that a student can transfer from a two-year institution, complete a four-year college degree at MSU and continue graduate school in one of the above-mentioned institutions. This program opens new doors to students in Eastern Kentucky.

The Commonwealth of Kentucky is in urgent need of an educated work force in the fields of technology. According to the 1999 publication, The Kentucky Occupational Outlook To The Year 2006, published by the Research and Statistics branch of the Kentucky Department for Employment Services, employment in computer and mathematics related occupations will grow the fastest of all occupational groups in Kentucky. At a two-day conference of the Appalachian Regional Commission (ARC) in Lexington in 1999 Governor Paul Patton reminded members that the ARC began in eastern Kentucky, a region he calls "the Cradle of Appalachia". Patton outlined his latest initiative to promote and sell the "New Appalachia" in Kentucky using the full support of the governor's office to seek out businesses and industry to invest in and develop the region. The governor envisioned creating industrial clusters in the "Cradle of Appalachia". These industrial clusters require an educated work force especially in technological related fields. The governor has already put projects in action towards the industrialization of the Appalachian region. The computer science program at MSU is crucial in preparing the necessary work force in Eastern Kentucky.